**Honors Chemistry Research Checklist/Grade Sheet**

This checklist was created to provide you with due dates for the various parts of your research. All materials will be kept in a research folder in the classroom.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Before Experimentation** *(Does not need to be typed)* | Item | Description | | Initial Due Date | Suggested Revisions | Final Due Date | Points |
| Equation | Write 3 balanced equations for the reactions between chemicals you might choose to work with in your project**. Make sure to add physical states.** | | 4/24/12 |  | 4/26/12 | /3 |
| Stoichiometric  Predictions  *(For Chosen Reaction)* | Using an arbitrary value for one of your reactants, predict the amount of the other reactant needed to carry out the reaction so that neither of the reactants is in excess. **Make sure that the quantities of both the reactants fall within the allowed range and check bottles for hydrates.** Also, predict the amount of the one product you choose to isolate. | | 4/27/12 |  | 5/2-5/3 | /4 |
| Hypothesis | In “If,…then” form state the quantities and identities of each reactant (the “if” part) and write your stoichiometric prediction of the product (the “then” part) | | 4/27/12 |  | 5/2-5/3/12 | /2 |
| Data Table | Must include rows/columns to accommodate a minimum of 3 trials. The columns should hold the following data: The amount of both reactants, amount of product formed, percent yield and percent error. The last row of the table should be the average value for each trial. | | 4/27/12 |  | 5/2-5/3/12 | /4 |
| MSDS sheets and Safety Summary | Print out MSDS sheets for each reactant and product in your reaction (with the exception of water). With a highlighter, highlight the information required on the summary sheet then complete the table | | 5/4 |  | 5/7 | /5 |
| Flow Chart | This must be approved before research can begin. This must include at least one decision loop and have at least 3 observation arrows to record observations before, during and after the reaction has occurred. **As a final step, make sure that you include how you are going to dispose of your products.** | | 5/4 |  | 5/7 | /2 |
| **Final Research Paper Due (On or Before) 6/1** | | | | | | | |
|  | Item | | Description | Comments | | | Points |
| Title | | Scientific-sounding, concise header that describes your experimental objective (approx. 7-15 words). |  | | | /2 |
| Co-authors | | State authors names alphabetically (last name first). |  | | | /1 |
| **Layout of Final Paper** | Abstract | | Although this is the first section read, it should be the last section written. The abstract should be roughly 200 words (or less) and should summarize all of your research (Hypothesis, experimental methods, results and analysis of error). |  | | | /15 |
| Introduction | | State the hypothesis. Provide not only your balanced chemical equation with physical states, but also include your stoichiometric calculations. **See Mrs. Pav if you need a refresher on the use of Microsoft equation editor.** Also, briefly summarize safety and disposal concerns. |  | | | /8 |
| Experimental Section | | State in paragraph form how the procedures were actually done with enough detail so that someone could repeat your experiment exactly the way that it was performed by you. **Do not bullet this information** |  | | | /10 |
| Results | | Begin with your data table. Follow your data table with your calculations for percent yield and percent error, labeling your calculations with the specific trial number from your data table. |  | | | /12 |
| Discussion | | Discuss your results in comparison to your hypothesis. Describe specific **feasible** sources of error that may have contributed to the error in **your** experiment. (i.e., If your percent yield was above 100%, do not discuss error that would result in a low percent yield) Although you are not required to provide calculations, you should examine the sources of error you state mathematically to see if they really would be feasible. |  | | | /20 |
| Conclusion | | Restate your original hypothesis and then briefly summarize your general findings in terms of whether your hypothesis was supported or refuted **(Never proven or disproven)**. State avenues for future research/improvements to your research. |  | | | /10 |
| References | | Cite references that you actually read to help you with this project. |  | | | /2 |

**The final paper must be/have……**

Typed, double spaced, on regular 8.5x11 paper (including calculations and data table)

Numbered pages

Submitted in the research folder with all previous (pre-experimentation) work included